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# West Europe Report

SCIENCE AND TECHNOLOGY

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26 October 1982

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No. 124

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## ELECTRONICS

### DETAILS GIVEN ON GOVERNMENT PROGRAM TO DEVELOP ELECTRONICS

#### Chevenement Address

Paris ZERO UN INFORMATIQUE HEBDO in French 20 Sep 82 p 87

[Article by Gerard Schmitt: "Four Poles for PAFE"]

[Text] In presenting his ministry's 1983 draft budget on Wednesday, and in his address the next day at the Forum of Expansion, Jean-Pierre Chevenement finally disclosed some details on PAFE: [Government Program for Development of Electronics], leaving it to Jacques Stern, president of CII-HB [International Data Processing Company-Honeywell Bull], to present, on 20 September, the company's new strategy, and and carefully avoiding marring the freshness of the topic of the talk Jean-Claude Hirel, director of the DIELI [Directorate of the Electronics Industries and Data Processing], would be giving on the same day at the opening of the Data Processing Convention.

Addressing "DIELI Electronics" on Thursday morning, therefore, and France's outlook in this domain, the minister of research and industry presented the broad outlines of the PAFE's industrial aspects. "The new industrial strategy will proceed on three fronts (...). The first will be that of the attack (...) we will bring to bear in three domains: Components, data processing and electronic products for the general market."

In the components field, action will be centered initially on a research effort.

As regards MOS [metal oxide semiconductor] circuits, the aim is to bring the coverage of the French market demand up from its present 16 percent to 100 percent by 1986, three-quarters of it to be supplied by French enterprises.

In bipolar components, the aim is that French industry become the European leader with 45 percent of the market and 13 percent of the world market, versus 20 percent and 5 percent respectively today.

Essentially, three French enterprises are involved in this activity: Thomson, MATRA [Mechanics, Aviation and Traction Company] and Saint-Gobain. "There is in this," the minister said, "a danger of dispersion of effort, and a scheme now nearing completion should facilitate the reorganization of this sector around just two nerve centers."

Ministry of Research and Industry's Draft Budget for 1983

<u>Item</u>	<u>Industry</u>	<u>Research</u>	<u>Total</u>	<u>Percent Increase 1983/1982</u>
Regular (operating) expenses [OE]:				
--Ministry (operation of services)	951.5	118.2	1,069.7	+11.1
--Operating subsidies to research organizations	15.1	13,224.6	13,239.7	+18.8
--Grants to industry	7,645.0	217.1	7,862.1	+27.1
Total operating expenses	8,611.6	13,559.9	22,171.5	+21.2
Program authorizations (capital expenditures) [PA]:				
--Research organizational grants and investments	21.7	8,801.1	8,822.8	+14.0
--Industrial investments	4,039.2	1,165.8	5,205.0	+17.6
Total program authorizations	4,060.9	9,966.9	14,027.8	+15.4
Total OE + PA	12,672.5	23,526.8	36,199.3	+18.9

Eurotechnique would sustain the costs of this restructuring (several possible plans are still under study with Thomson-EFCIS [Research and Manufacture of Integrated Circuits] and CII-HB).

In data processing, efforts will be regrouped around CII-HB. The strategy of the national builder will henceforth be "more enlightened, more aggressive and self-assertive," and will proceed along four principal axes, the details of which appear to indicate that CII-HB still has every intention of making its presence felt in all the niches of this market.

Confirming the imminent putting in place of the national "chips for mini- and microprocessors" project, Jean-Pierre Chevenement made a brief reference (intentionally?) to "the takeover of the SEMS [expansion unknown] by the CMB [Bull Machines Company] (parent company of CII-HB)."

As for general electronics products, the leadership will be provided by Thomson.

The second front, that of coherence technologies, will be aimed at maintaining our "strong positions," which are telecommunications and professional-market electronics, and at developing electronic instrumentation for medical and space uses. Particularly "in the domain of production engineering (...), a regrouping of forces around the CGE [General Electrical Company] and MATRA, through their different subsidiaries, will be sought".

However, "It is out of the question to imagine that France, through her own efforts alone, can profoundly change the existing balance in the electronics sector." She will also seek to implement a policy of international cooperation. This will be her third strategic front.

"We will commit the funds needed to ensure the success of this strategy, and, beginning this year, the 1983 budget will show a doubling of the credits allocated to the electronics effort." In fact, the appropriations being requested reflect an increase of 111.4 percent from 640 million francs in 1982 to 1,352.8 million francs in 1983. To these credits must be added those of the oversight agencies such as the ADI [Data Processing Agency] and the CESIA [expansion unknown], whose investment outlays will increase from 229.8 million francs (1982) to 268.3 million francs (1983) and from 17.2 million francs (1982) to 21.7 million francs (1983), respectively.

Lastly, the public-sector enterprises will receive, in 1983, government subsidies in the form of capital grants totaling 7,300 million francs, 500 million of which are already reserved for CII-HB.

#### More Information From Hirel

Paris LES ECHOS in French 21 Sep 82 p 3

[Text] In his address, to a packed auditorium, at the opening of the Data Processing Convention, Jean-Claude Hirel provided more details on the content

of the PAFE [Government Program for Development of Electronics], the industrial aspects of which had already been outlined last week by Jean-Pierre Chevenement. Coupled to the planned investments totaling 140 billion francs over a period of 5 years, the quite specific production objectives have now been set forth.

Overall, the annual growth of the sector is to be increased from 3.1 to 9 percent, attaining 170 billion constant francs in 5 years instead of the 130 billion that had been forecast by merely following the trend. For components, the objective is a production of 2.1 billion francs, with an overall rate of demand coverage of 100 percent.

In passing, the director of the DIELI remarked that "There can be no industrial policy without a utilization policy; in particular, the coordination of a policy of procurement of components, especially by large industrial groups, must be an ongoing effort."

In the general electronics sector, in which Thomson's lead role was confirmed, the aim is to attain a production level of 10 billion francs in 5 years, corresponding to 70 percent of the French market as compared to 50 percent today. A very clear allusion was made to some imminent alliances: "It is desirable to undertake some developments by way of external growth. Talks are under way. They could come to fruition before the end of this year."

In the data processing domain, the aim is 35 billion francs, or 100 percent of the French market. This was set forth with the following comment: "CII-HB has always been thought of as the national champion of the French data processing scene. Now, it must actually become so."

Within the terms of reference of the cession of the SEMS, Thomson will be associated with CII-HB for the development of the big military computer. Jean-Pierre Chevenement. And Jean-Pierre Chevenement will shortly receive the visit of the general manager of Olivetti "to talk about the future of relations between that group and France."

Funding priorities (state, industries, public and private investors) were also discussed by Jean-Claude Hirel: 40 percent will go to consolidating the strongpoints, which are electronics for the professional market and telecommunications, 43 percent to components, general electronics products and data processing.

To steer this policy, a coordination committee has been set up under the Interministerial Committee for Electronics, consisting of four heads of administration from the Ministries of Industry, PTT, Defense and the Plan, and others "should they be needed." Budget appropriations will exceed 2 billion francs in 1983 and will come to as much as 8 billion francs if one adds in the credits "thrown in" by Defense and PTT.

9238

CSO: 3698/3



## ELECTRONICS

### ELECTRONICS FIELD IS 1983 PRIORITY FOR ANVAR

Paris ELECTRONIQUE ACTUALITES in French 17 Sep 82 p 2

[Text] On 9 September, ANVAR [National Agency for the Valorization of Research] unveiled its program in support of the government's industrial and research policy. This program features a sharp increase in the innovation bonus from 20 million francs in 1981 to 30-40 million francs in 1982, and almost triple this figure in 1983. Furthermore, the electronics and energy sectors will be priority ones and will benefit from higher margins of coverage than the average (35 percent).

Mr Marbach, ANVAR's general manager, has submitted projects for 1983 that are supportive of the governmental programs designed to motivate innovation.

It is worthy of note that the governmental appropriation under the 1983 budget will be almost triple that of the previous year, and that furthermore the margin of coverage to be guaranteed by ANVAR for privileged programs, which include the electronics one, will increase from 25 percent to 35 percent. This increase is linked to a planned increase of 17.8 percent in the research budget.

The system of subsidies and bonuses for innovation has been highly successful: In 1981, 1,400 dossiers benefited from favorable decisions; for the first half of 1982, this figure was 780 dossiers, indicating that there will be some 1,700 such dossiers for all of 1982.

#### Place of the Motivative Programs

Similarly, since 1979, ANVAR has granted 1,743.6 million francs in subsidies to innovation; under the motivative programs decreed by the Ministry of Research and Industry, 857 million francs have been distributed among 500 dossiers, 302 of which concern energy and 197 electronics. In the electronics field, the portion that has gone to instrumentation has been preponderant, but the effort being deployed on components, professional equipment and even on general consumer electronics has also been supported. In all, 10 percent of the innovations supported by ANVAR pertain to the professional electronics sector and data processing.

The number of applications for subsidy filed as of 30 June 1982 for this year totaled 3,559, of which, for the sectors of interest herein, 6 were for research, 158 for data processing, 90 for electronics and 86 for automation. ANVAR finds no discouragement on the part of enterprises from the standpoint of innovation, but notes a very contrasty regional distribution pattern as well as a need for substantial funding in support of the applications being filed.

9238

CSO: 3698/7

## ELECTRONICS

### CII-HB INTRODUCES HIGH-SPEED IMPACTLESS PRINTER

Paris ELECTRONIQUE ACTUALITES in French 17 Sep 82 p 9

[Article by J. P. Feste: "CII-HB: Impactless Printing at 6000 Lines Per Minute"]

[Text] CII-HB [International Data Processing Company-Honeywell Bull] has developed an impactless electromagnetic printing technique that is to be exhibited at the SICOB [Exposition of Office and Business Supply Industries and Business Organizations] in the form of a prototype printer.

This printing technique permits the printing of 6,000 lines per minute, or 88 lines per minute, with a resolution of 240 x 240 points per square inch. The MTBF [Mean Time Between Failures] of this printing head is put at 1 million pages, or around four times better than that of existing systems offering similar performance.

#### 3,360 Magnetic Heads In Line

This printing technique makes use of magnetism; it consists of an in-line array of 3,360 magnetic heads that produce a magnetic latent image on a production platen. A magnetic powder is then spread over this platen and then cold-transferred by pressure onto the paper.

Each head consists of a high-magnetic-permeability, wound metallic core. One of the poles of the head has the shape of the point that will be used to composite the grapheme to be printed. The magnetic field formed by the head is closed by way of the printing platen. This platen, 10 cm in diameter, consists of a ferromagnetic core clad with a nonmagnetic covering and sheathed in the nickel-chrome reproduction outer covering.

So that only the printing pole of the head will leave significant residual magnetic information on the platen, the head has two poles of dissymmetrical areas, ensuring that the flux through the printing pole will be greater than the flux through the field return pole. The magnetic field in the air gap of the printing pole will therefore be very great (inversely proportional to the area of the pole) with respect to the field in the air gap of the return pole.

The size of the point, 100 microns, is, with this configuration, exactly equal to that of the reproduction pole, and each head, to be active, needs only current pulses of around 10 milliamperes. The need of only a current pulse for purposes of command makes it feasible to use multiplexing to control the head array.

This array of 3,360 magnetic heads is divided into 10 multiplexed modules. The 3,360 heads are arranged in a horizontal line; the concentration of the printing poles is 240 per inch. The imaging sweep, by rotation of the platen, also defines an image concentration of 240 points per inch.

To command this large number of magnetic heads, CII-HB has devised a matrix configuration of the heads in each module of 336 heads each, such that 48 control lines and 70 command lines are sufficient.

The magnetic platen turns at constant speed and, at each rotation, passes in front of a head that demagnetizes it and prepares it for a new magnetic latent image.

On the platen, the latent image corresponds to one page. This image is in some way developed as it passes through an inking device using fine-grained, premagnetized magnetic particles. Excess particles on the platen are removed by a pneumatic device. Transfer of the image developed by the magnetic powder is effected by pressure on the paper, where it is fixed by heat-drying. A scraping device removes the excess ink after the printing, then the platen goes into its demagnetizing cycle.

The principle can even be used for two-color printing; it is only necessary to use a second magnetic powder of another color and premagnetized with opposite polarity. To print in this color, the heads must receive a current pulse of inverse polarity to that used for black and white printing, for example.

This technique also makes it possible to make as many duplicates of a page as desired: In this case, it is only necessary not to demagnetize the platen; the residual magnetization of the page will provide multiple printings.

When the Printer?

According to CII-HB, this impactless printing system should be more reliable than its competitors, owing to the very small number of moving parts. Furthermore, the fabrication of the heads, largely automated, should enable the company to market this type of printer right from the industrialization phase, at a lower price than printers of similar performance. For the time being, only the technique is being demonstrated and CII-HB will not be rushed into putting on the market a printer which, although still only a prototype, can already print a set of 256 characters. We will have to await year-end 1983 for the company to market a competitive printer.

9238

CSO: 3698/7

## ELECTRONICS

### CII-HB PRESIDENT OUTLINES COMPANY STRATEGY

Paris ELECTRONIQUE ACTUALITES in French 24 Sep 82 pp 1,9

[Article by P.S.: "CII-HB: The Same Strategy and the Means to Apply It"]

[Text] CII-HB /International Data Processing Company-Honeywell Bull/ announced that it will start marketing three new computer models for small and medium-size enterprises, the DPS 4/21, 61 and 82 systems, as well as a new disk unit (60-120 million bytes) for the OEM [Original Equipment Manufacturers] market. CII-HB also just introduced two new word-processing systems on the office-automation market.

The new CII-HB president, Mr Stern, took this opportunity to state again the guidelines of his company's strategy, a strategy which must be viewed in its context if it is to be distinguished from that of Mr Stern's predecessors.

The new CII-HB strategy does look like the company's strategy as it was defined in the early 1970's by Mr Desbrueres, one of its former presidents. CII-HB still intends to provide its customers with global solutions, and intends to be represented on all computer and communications markets; CII-HB does not plan to emphasize compatibility with IBM, it still ambitions to offer an alternative to IBM, and it plans to emphasize open-ended networks that will enable different systems to coexist.

The difference between now, yesterday and long ago still does exist, and it is considerable. Today, CII-HB can establish a long-term industrial and marketing strategy. It is no longer compelled to follow the designs of a foreign partner. It no longer has to perform financial acrobatics as a result of the short-term views of shareholders groups.

As a result of this difference, the strategy remaining the same otherwise, the company's policy can now be more oriented toward users' requirements. "Quality will be our major criterion for success in meeting our customers' increasing demands, and we shall reject palliatives that would be only cosmetic improvements," Mr Stern insisted at a press conference.

As far as products are concerned, CII-HB intends to broaden appreciably the scope of its catalogue, both on its own and by taking advantage of the synergistic effect caused by the electronic systems industry.

"CII-HB will not do everything," Mr Stern stated, "but it will not wait for a market to exist to get interested in a new product."

As far as minicomputers are concerned, the company intends to become the leading supplier of the domestic market with the new line that will result, in three years from now, from the convergence of its own models and those of SEMS [expansion unknown] which it will take over.

As far as microcomputers are concerned, production rates at its R2E [expansion unknown] subsidiary will progressively increase from 15,000 to 100,000 units per year (a 16-bit word model has just been announced).

In office automation, finally, CII-HB believes it has a good marketing potential, "for none of our competitors has yet achieved a dominant position."

Beyond these considerations, the most interesting in what Mr Stern said is his vision of the future. The 1980's, he said, will be marked by the development of new applications (voice, image), domains in which no one now holds a dominant position and where, therefore, everything is still possible; the 1990's will be marked by the advent of systems for the layman, and will rely on software developments and product and service quality.

His appreciation of the European market is also interesting: three-fourths of this market are now held by non-European companies; this proportion should be brought down to 50 percent, he stated, emphasizing (as his predecessor, Mr Brule, had done) that European manufacturers could cooperate to achieve these objectives, and that such a cooperation might be easier when seen from the angle of open-ended networks.

Answering a question about a different subject, Mr Stern stated that CII-HB (which has financial expenses amounting to 10 percent of its total sales, due to the fact that it lacked its own capital under the previous management) would recover its profitability within the next five years while carrying out its normal operations.

#### New Products

With respect to computers as a whole, CII-HB has just added three new business computers to those it already offered: the DPS 4/21, DPS 4/61 and DPS 4/82 systems. These new systems are more particularly intended for the small and medium-size enterprises/industries market.

The DPS 4 line, all models of which use a new version of the GCOS 4 operating system, offers a large variety of emulation, conversion and translation tools for other CII-HB or competitive systems. The whole DPS 4 line is featuring the 64 K bit MOS [metal-oxyde semiconductor] technology and a telemaintenance

system. A new 650-lines/min OCR [Optical Character Reading] character-band printer developed by CII-HB is offered on all DPS 4 models.

In office automation, the new TTX 35 station, developed and manufactured in France by CII-HB, is a stand-alone word-processor, a word-processing terminal and a data-processing terminal, all in one.

At the top of the TTX line, CII-HB introduces a new word-processing system, the TTX 90. This system, which is fully compatible with TTX models 60 to 85, also features the latest ergonomic improvements with respect to keyboard and full-page display utilization. The TTX 90 system is offered in four different versions, depending on the size of the core memory (96 and 128 kilobytes), the number of floppy disk drives (one to four 315-kilobyte floppy disks). A 5 million bytes Winchester disk is available as an option.

As far as peripherals are concerned, CII-HB has announced new products for the OEM market. The announcement concerned a disk unit in the Cynthia D 100 line, and four new "Easy Box" disk subsystems.

The Cynthia D 165 provides the user with 60-120 million bytes formatted on fixed (10-1/2 inch) Winchester disks.

9294

CSO: 3698/12

## ELECTRONICS

### THOMSON-CSF EXPORTS TURNKEY IC MANUFACTURING PLANTS

Paris ELECTRONIQUE ACTUALITES in French 24 Sep 82 p 20

[Article by J.P.F.: "How To Export Turnkey Printed Circuit Manufacturing Plants"]

[Text] The exportation of components or machines does not have to be limited to products. It can also focus on technology accompanied by plant assembly on foreign sites; this is what CITEC [expansion unknown], Thomson-CSF [General Radio Company] subsidiary, has chosen to do for printed circuits. To meet the demand, this company just invested over 2 million francs in a computer-aided circuit-design system that will include computer-aided drafting, computer-aided methods and the final imprinting of the circuit.

#### A Showcase

To enable prospective customers to evaluate the performances of the plant as a whole, the company manufactures and markets printed circuits. To such purchasers, CITEC can provide a turnkey plant including the buildings, the industrial knowhow (including documentation and technicians-training lasting from 6-8 weeks to 6-8 months), on-site technical assistance, equipment and spare parts. On the average, instalment payments from such projects now provide the company with 40 million francs per year. CITEC manufactures printed circuits for marketing and its 1981 sales amounted to 35 million francs. In 1982, this figure should exceed 40 million francs.

Its production is oriented to the computer, telephone, defense and professional markets. The technologies used cover the whole range of the present state-of-the-art; in particular, the company is about to start producing Class 5 printed circuits consisting of three conductors between two chips placed 1 inch apart.

For computer-aided circuit design, the company is using as "heart computer" a VAX 11/750 with 2 megabytes of storage memory; the graphic station is a Redac and, for simple operations, the company uses a specialized bottom-of-the-line system, the Cadet. For computer-aided drafting, the company uses a PDP 11/34. This system will become operational late in 1982 and represents an investment



of over 2 million francs. It will be used to design printed circuit boards but also for methods management (how to manufacture the product) based on data provided by the "heart computer," and to manage the electrical testing of the boards. This computer-aided design system will replace a complex system still used by CITEC, and the "electronic heart" of which is located near Paris. The new system will be located within the company. The software used is the standard Redac software; eventually, it will be replaced by software now being developed by Thomson-CSF.

As far as it is concerned, CITEC does not seem to suffer from present economic conditions and especially from the reduced activity which affects several printed-circuit manufacturers.

Rather, the company seems to have difficulties in meeting the demand and its order books cover approximately four months.

9294

CSO: 3698/12

## SCIENCE POLICY

### REORGANIZATION OF MINISTRY OF RESEARCH, INDUSTRY ANNOUNCED

Paris LE MATIN in French 9 Sep 82 p 2

[Article by Olivier Péretié: "Chevenement Redeploys His Ministry"]

[Text] Three major directorates -- research, industry, and energy -- have been set up. Jean-Pierre Chevenement, Minister for Research and Industry, yesterday told the cabinet about the way he plans to reorganize his super-ministry. As of now, it will be run from three general directorates: research, industry, and energy. Louis Gallois, hitherto the minister's chef de cabinet, becomes director general for industry. He is replaced as chef de cabinet by Loïc Hennekine.

The Ministry of State for Research and Industry now consists of three major divisions: the Research and Technology Directorate, child of the old Research Ministry, is now headed by Roland Morin, 50, an Ecole Nationale alumnus, Audit Office counsel, and economics professor at the Ecole Nationale for Political Science. The General Directorate for Industry tops the three major directorates of the old Ministry for Industry: the DIELI (Electronics and Computer Industries Directorate), the DIMM (Mining and Metallurgy Directorate), and the DICTD (Chemicals, Textiles, and Miscellaneous Industry Directorate). The much-talked-of DGI was the brainchild of Michel D'Ornano, and was headed at various times by such men as Hugues de L'Estoile, now boss of Dassault-Breguet, and Jean-Pierre Souviron, who is now at Matra. Under the tutelage of its string of directors, the DGI had become something of a state within a state on the Rue de Grenelle. That state of affairs came to an end under Pierre Dreyfus, Jean-Pierre Chevenement's predecessor, and under his chef de cabinet, Loïck Le Floch, to be replaced by a less activist General Directorate for Industrial Strategies.

The new DGI, they vow at the Industry Ministry, will not be a clone of the old one. In any case, Jean-Pierre Chevenement has turned it over to a man on whom he can rely: his own former chef de cabinet, Louis Gallois. At 36, this graduate of the prestigious National Commerce School has never tried his hand at private or even state-owned industry. He has, however, spent 2 years as France's

ambassador to Tokyo, and since then has been handling matters relating to French investments abroad -- and foreign investments in France -- at the Finance Ministry.

The Japanese model, which Jean-Pierre Chevènement so loves to cite, is one with which his new chef de cabinet, Loïc Hennekine, is thoroughly familiar. This 42-year-old Bordeaux native, also a product of the Ecoles Nationales, spent some time himself as top man in the French embassy in Japan from 1979 to 1981, before he switched to international matters at the Industry Ministry.

The third general directorate, which deals with energy and raw materials, is already a going concern. It is still headed by Jean Syrota, a Polytechnique graduate, mining engineer, and former boss at the DAI (Directorate of International Industrial Affairs) in the Post Office and Telecommunications Ministry under Giscard, where he replaced ... Jean-Pierre Souviron. The ministry will also cover five services, all of them available to the three general directorates: a general administration directorate, a regional affairs directorate, an international affairs directorate, a scientific and technical mission, and a forecasting and evaluation center.

6182

CSO: 3102/446

## SCIENCE POLICY

### WORK CONTINUES ON FRANCE'S NEW INDUSTRIAL POLICY

#### Industry, Research Representatives Meet

Paris LE MATIN in French 21 Aug 82 p 4

[Article by Henry Lauret: Chevènement Stirs Up Industry]

[Text] Big shakeup in Jean-Pierre Chevènement's Ministry for Research and Technology. Today he welcomed the presidents of the nationalized corporations and the directors of all the major government research agencies. On the agenda: his new industrial policy and its funding plans.

Chevènement up against the wall. The Minister for Research and Technology today invited 15 presidents of State-owned corporations and 15 research agency directors to sit down at his conference table. On the menu: industrial policy, its shape, and its goals. Right now, as Pierre Mauroy's government blazons its determination to get French industry back on the international competition track, we all know the rôle that is fated to fall to the public sector (which now accounts for 32 percent of French industry and 60 percent of French industrial research).

The left, which decreed expanded nationalization by taking over Saint Gobin, Rhône-Poulenc, CGE, CH-HB, PUK, and Thomson, now has its hands on an extremely powerful, albeit fairly cranky lever. That being the case, it is up to the left to begin by spelling out the rules of the game. We still have no clue as to how they plan to do it, even though the ante the State has put into the pot (12.4 billion francs) is common knowledge, even though the Minister for the Economy and Finance recently distinguished himself by presenting a plan for channelling what there is of available savings into industry.

The deep red tinge of the books in a great many of the sectors involved -- steel, energy, automobiles, data processing, chemicals, consumer electronics -- gives some hint as to the size of the challenge. What really troubles French industry is, in many cases, its failure to adapt. It is, in almost every case, its lack of

competitive gumption. This means that its structures must be trimmed and tailored accordingly, if there is a real intention to make the public sector play the part of prime mover for all of industry, which is the rôle in which it seems to have been cast. On both sides of the fence, modernization of the productive apparatus tops the list of priorities: it would indeed be futile to count on any return to really competitive stance without investing in our factories.

It would be equally fatuous to hope that, by some wave of a magic wand, our technological lag might be dumped on such partners -- and rivals -- as Japan, FRG, and the United States. The sorry state of our foreign trade -- 52.3 billion francs in deficit since the start of this year -- bears witness to that stark reality: French industry simply is not geared to respond to every little tremor in the consumer market. In place of the old, long-discarded slogan about winning back the home market, it would be better to talk about winning some foreign markets. If we can't do that...

Jean-Pierre Chevènement knows all this. So do the people he must talk to. Their job is the harder in that it would not be a good idea to miss the boat yet again. In the past, all attempts to get our foundering industry afloat again have come to naught, in most instances through lack of consistency or money. The left has bet its all on nationalized industry because it was certain that this was the best way to break free of short-term constraints and get at the root of the problem.

The future will tell us whether or not this radically different choice was the right one. The presence around a single table of the big bosses in research and industry stems from the same logic: genuine synergy between research and industry is indeed the sine qua non for restoring some tonus to our flabby industrial muscle.

#### Six New Public Groups

Paris LE MATIN in French 31 Aug 82 p 4

[Text] CII-HB Its president: Jacques Stern. Degrees from the Polytechnique (Sup-Aero) and Harvard. Founder of a major data-processing service company, SESA, he is thoroughly cognizant of all aspects of computer technology, including the user viewpoint.

The Corporation. C.A. in 1981: 7.3 billion francs. Losses: 449 million francs. Payroll: 16,200. The flagship of France's data processing and computer industry will have to review its strategy, win back its technological independence from the Americans, and update its production lines. The government plans to make it the magnetic core of the whole computer industry by regrouping and consolidating the activities of Thomson and the other companies active in computer technology and by contracting European alliances. To face up to the ubiquitous IBM, CII-HB will concentrate on small and medium data processing equipment and on networking. As it toes its Nth starting line, the corporation is in a very delicate position.

France was split in two: consumer electronics (television, hi-fi, appliances) went to Brandt; the professional sector (avionics, telephonics, and components) to CSF. These are strategic sectors in which practically all the major decisions are still to be made. What kind of international alliances will have to be contracted to stand up against the Japanese and the Americans, both in components and in consumer goods? Which branches will have to be pruned (telephonics ? computers? medical?). And, finally, how to go about restoring some competitive stance to a corporation whose military contracts are the only ones that show a consistent profit?

Rhône-Poulenc. Its president: Loïc Le Floche-Prigent, 39 years old, an engineer by training. There were no visible portents to indicate that this civil servant, who rose through the ranks of the General Delegation for Scientific and Technical Research (DGRST) would become manager of one of the largest industrial conglomerates in France, except perhaps his closeness to Pierre Dreyfuss, whose chef de cabinet he was for a time.

The Group. C.A. 1981: 35.9 billion francs; payroll: 89,340. Losses: 335 million francs. For a time very well placed in certain areas of chemicals and pharmaceuticals, Rhône-Poulenc spent all its corporate muscle in the worldwide crisis of the textile industry. With some fairly brutal clear-cutting operations connected with restructuring, the group headed out along a path that has led it increasingly into conflict with the unions, particularly since 10 May 1981. Its former president, Jean Gandois, has finally decided to leave. Now that it has shed its heavy chemicals interests, the group must demonstrate that, even without all the funding Gandois demanded, it can complete its corporate metamorphosis in such sectors as refined chemicals and biotechnology.

Pechiney-Ugine-Kuhlmann. Its president is Georges Besse, 54, a Polytechnique and School of Mines graduate. Working under André Giraud, he has built a reputation as a demanding, pragmatic manager. Moods are not his strong point. His experience as head of Cogema, a subsidiary of the Atomic Energy Commission (AEC) has earned him a reputation as a financier, but as an industrialist as well.

The Group. C.A. 1981: 41 billion francs; Payroll: 71,000. Losses estimated at 1.7 billion francs. An omnium-gatherum conglomerate, its interests range from aluminum and copper processing to chemicals, by way of nuclear energy and light industry. Its widely scattered plant and its obsolescence led it to get out of special steels (now in Sacilor's hands). The problem of chemicals is still up in the air; it has become a financial abyss, and the government wants Elf-Aquitaine to take it over. There will be major restructuring surgery prior to reconcentration around aluminum and nuclear power.

Saint-Gobain. Its president is Roger Faroux, 55, alumnus of both the Ecole Normale Supérieure and the Ecoles Nationales, he is also a theologian. He speaks with the zesty Gascon accent of his native region and is, now that it's over, the only man of his ilk to survive the leftist massacre. He is one of the select breed of great managers. An astute politician, he has always had a gift for choosing his aides and for taking care of his friends.

The Group: C.A. in 1981, 43.5 billion francs. Payroll: 135,000. Profits: 450 billion francs. One of the grandes dames of French industry, Saint-Gobain took a rejuvenation cure when it plunged head-first into the computer field (taking over CII-HB and buying a 35-percent interest in Olivetti). Its traditional fields glass, insulation, packaging, paper, lumber, cast iron) can boast, even now, of remarkable self-financing capacity. It is, however, wholly committed to "soft growth." Now that the government has severed all its links with electronics for the future, the group will have to go looking for another growth area within reach of its means and ambitions.

Compagnie Générale d'Electricité. Its president, Jean-Pierre Brunet, 62, is a graduate of the Navy School and holds ambassadorial rank. The former diplomat and labor activist (CGT) now heads one of the giants of French industry. As successor to Ambroise Roux, he is by no means a born captain of industry. His job is to make sure the transition is a peaceful one.

The Group: C.A. 1981 57.6 billion francs; payroll: 184,000; profits: 586 million francs. The CGE galaxy covers fields as disparate as electric construction, shipyards, public works, water management, office technology, and telecommunications. Often perceived as a financial holding company, the empire built by Ambroise Roux and Georges Pébereau must first of all affirm its industrial calling. No question but that CGE was alone (save for Saint-Gobain) among the newly nationalized companies to show a profit. But will it be able to lay its hands on enough resources to keep its place among the traditional sectors of the economy, and at the same time grow still bigger in future-oriented telecommunications and office systems?

Thomson. Its president is Alain Gomez, 43, another "énarque," co-founder, with Chenément and a handful of others, of his party's Center for Studies, Research, and Education (CERES), he is described as a tough man, a hard driver. Plucked out of the general staff at Saint-Gobain, he has, in a matter of a few months, mastered the subtleties contained in the thick files of the electronics industry. As of 8 September, he will be absolute master of the group following Bouyssonie's ouster.

The Group: C.A. 1981: 43.6 billion francs; payroll: 130,000. Losses: 168 million francs. The biggest electronics firm in

## Nationalized Industry's Major Rôle

Paris LE MATIN in French 31 Aug 82 p 5

[Article by Eric Le Boucher and Olivier Péretié : "The State as Boss. Public Sector Does 32% of French Industry's Volume of Business."]

[Text] What is the great sweep of nationalizations supposed to accomplish? More than a year has passed since passage of the public sector expansion act, but the government has yet to come up with the definitive version of its "grand" industrial policy. And yet, with 80 percent of steel, 84 percent of aeronautics, 54 percent of basic chemicals, 40 percent of electronics, and in all 32 percent of French industry, the state has never yet gathered into its own hands so many sparkplugs to get the whole economy rolling again.

Picking up the industrial challenge of the Eighties means, for the government, creating jobs, winning back France's technological independence, making a fresh start on research and investment, and changing labor-management relations within the companies.

It's a vast program, one in which the national corporations are cast as both spearhead and prime mover. For several years, now, for that matter, the public sector has done a little bit better at its mission of industrial development than the private sector has.

For example, from 1976 to 1980, the old public corporations increased their investments by 121 percent in current francs, as compared with 64.4 percent for all industrial concerns and a mere 46 percent for the corporations that are nationally owned today. The same story holds for the jobs picture: employment at the newly nationalized companies declined by 11.9 percent over the same span, while jobs in the public sector rose by 2.1 percent... Of course the major projects, such as nuclear power plant construction, had a lot to do with the gap between the two sectors. The fact remains, however, that these figures provide cogent arguments for the new government's decision to rely on an expanded public sector as the foundation for its new policy structure.

Simple logic, though, requires that two conditions be met if any such policy is to succeed: give the national corporations the money they need for their growth -- if not their survival; and once and for all, draw up and publish the list of sectors targeted for special effort. As of now, there are no indications that these conditions are being met. It was perhaps with an eye



to resolving those doubts that Jean-Pierre Chevènement today summoned the bosses from all the national corporations to confer with him.

It's going to be a tough job. In 1982, the national corporations are going to need close to 15 billion francs, just to balance their often catastrophic books, except for CGE and Saint-Gobain. They will get only 6.4 billion francs in the form of capital endowment and 6 billion in the form of participatory loans from the banks. The lack of funds may be even more acute in 1983, when capital contributions will amount to only 7.5 billion francs to cover needs estimated at 20 billion....Will Delors' plan to tap the thrifts for investment funds be enough to fill the gap?

As for the strategic options, mystery still cloaks the reconstruction plans for most sectors, particularly electronics, telecommunications, chemicals, etc.

What will the final answer be on Elf-Aquitaine's takeover of chemicals from PUK? Will Thomson hang onto telephonics? Will it become the great core company for all of the electronic components industry? These are just some of the many questions that have yet to be given specific answers.

The state, which now controls 80 percent of steel, 84 percent of aeronautics, 75 percent of synthetic textiles, 43 percent of basic chemicals, 40 percent of electronics or 35 percent of glass, will simply have to face up to some truly dire decisions. And hence it must perforce impose its will.

What will be left, once that is done, of management autonomy as promised by the President when the nationalization act was passed? That is a question bound to be very much on the minds of all the bosses Pierre Chevènement summoned to his office today, and the answer to it will determine the cast of French industrial socialism.

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## TRANSPORTATION

### VW, NISSAN DISCUSS WORLDWIDE COOPERATION

Hamburg DER SPIEGEL in German 30 Aug 82 pp 64-65

[Article: "Join Forces"]

[Text] VW and Nissan, Germany's number one and Japan's number two among the automobile makers, are joining forces.

Host Takashi Ishihara, president of Japan's Nissan automobile concern (Datsun), expected a great deal of the visitor from Germany. Officially, the trip to the Far East that Carl Hahn, the new VW boss, undertook in July was treated as an introduction visit accompanied by a plant inspection. In fact, however, the two automobile bosses wanted to reach an agreement concerning worldwide cooperation of the two concerns.

The move was prompted by two competitors. The managers of VW and Nissan are concerned about the fact that General Motors, the world's biggest automobile concern, and Toyota, the leader of Japan's automobile industry, are intensifying their contacts.

The planned liaison between the two giant automobile makers is intended to develop joint production and marketing strategies in the world's key markets. Moreover, beginning in 1984, GM's Detroit assembly lines are to turn out the first Toyotas.

Ishihara impressed on his visitor the need for VW and Nissan to follow suit and join forces; he said the cooperation between Germany and Japan should go far beyond the agreements signed in September 1981.

A year before the conclusion of that agreement, Hahn's predecessor, Toni Schmuecker, had made an arrangement with Ishihara, according to which Nissan may build VW's Santana model for a licensing fee of approximately 4 percent of the production costs. Wolfsburg will supply the engines and transmissions.

Beginning in October 1983, Nissan robots will be welding and screwing together the Santanas in the Zama Plant near Tokyo. The assembly volume projections provide for 4,000 vehicles per month and by 1986, the output will be increased to 8,000.

The managers of the two concerns now want to go beyond the modest Santana cooperation and establish a real linkage. The plans range from joint assembly to reciprocal supply of automobile parts. Ishihara brought up and discussed continent after continent to show the advantages offered by cooperation.

The most serious concern of the Japanese manager is the marketing difficulties in the United States: To protect its own automobile industry, the American Congress wants to establish import barriers. A recent bill restricts every foreign concern to an annual import quota of 100,000 vehicles. Three of every four parts of each additional car sold by the producer in the United States must then bear the "made in USA" seal.

This would make things difficult for Nissan. For this year Japan's number two will be shipping approximately 450,000 Datsuns to the United States. Even if the new Nissan plant in the U.S. state of Tennessee--designed to turn out approximately 250,000 vehicles--is put into operation next year, the Datsun sales would still exceed the import limit.

VW could help by supplying its partner with production installations for assembling Datsuns made in USA. VW's Westmoreland Plant, which is designed to turn out 230,000 vehicles, presently operates below the 50-percent capacity utilization level. On account of the drop in demand, a plant VW bought 2 years ago in the U.S. state of Michigan presently is not utilized at all.

The assembly aid would generate income for VW, while Nissan could quickly obtain an additional production plant.

In Asia, on the other hand, where VW never stood a chance against Japan's fleet of compact cars, Nissan could help the Germans to gain a foothold. According to the conception of the VW managers, Ishihara would have to expand the Santana production. Wolfsburg then would sell the VWs made in Japan via Nissan's marketing network in Asia. The Santanas for Australia could be produced by Nissan's Australian plant, a former VW plant.

The two partners want to join forces in Africa as well. In the VW plant in Nigeria, capacities are available for Nissan. The plant--designed to accommodate a daily assembly volume of 100 cars ("Bug," "Passat" and "Audi 100")--presently operates at no more than 50-percent capacity. Due to the lack of demand, the Wolfsburg concern, which controls approximately 25 percent of the Nigerian automobile market, was forced to cut back production by over 36 percent during the first 6 months of the year.

Nissan, too, was forced by the slump in West Africa to change its marketing strategy. Instead of erecting its own plants, for which it has now obtained the construction permit, the concern wants to use the facilities of its partner, which then would assemble Datsuns as well.

It appears that even in Latin America, which so far has been the domain of VW do Brasil, partnership with the Japanese soon will no longer be a taboo subject for Wolfsburg. VW finds itself confronted with a challenge in its Latin American territories. For the Toyota compact cars produced by General Motors are to be sold in all the markets from Mexico to Brazil. Nissan, too, is pushing strongly to obtain a share of the Latin American market, which so far has been neglected by the Japanese. Ishihara's concern could sidestep an expensive and risky construction effort and lean on VW. For the VW plant in Sao Paulo likewise operates only at the 50-percent capacity utilization level.

In the view of VW's head planner, Siegfried Hoehn, it is only natural that General Motors and Toyota as well as Nissan and VW are now pooling their resources: "In the automobile industry, the need for capital is so great that there is going to be more risk-sharing."

To be sure, the cooperation with the Japanese is not to go too far. In Europe, the two concerns will continue to operate independently.

The Wolfsburg managers thus hope that Nissan will drop its plan to build a plant in Great Britain. After all, VW does not plan to build plants in Japan.

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## TRANSPORTATION

### PARIS AUTOMOBILE SHOW FORESHADOWS FUTURE

Paris L'HUMANITE in French 29 Sep 82 p 11

[Article by Jacques Moran: "Where Is the Automobile Industry Going. Models at the 1982 Show Foreshadow the Future. The Car of the Year 2000 Is Born"]

[Text] In a first article,\* we saw how French manufacturers allowed their foreign competitors to get the better of them on the French market, even though the scenarios were different for Renault, a national enterprise, and Peugeot-Citroen-Talbot, a private group. A glance at the Show, where new French models are few, reveals it. Yet, now that the car of the next decade is shaping up and beginning to come out of the plants, it is not the moment for our automobile industry to mark time.

"That was in 1982. The Show was still at the Porte-de-Versailles fair grounds," people will say in 10 years from now, to place the beginnings of the latest automobile revolution. Certainly, at first sight, nothing was obvious. At first, the hundreds of thousands of visitors at the 69th Show saw only cars like any other cars, or almost, cars with four wheels, one (gas!) engine, one trunk. Old models were shown along with the new, the R 4 next to the Audi 100. They had to take a closer look, to pay attention, to listen. All the more so as Renault, the first European manufacturer, had not even taken the trouble to delegate salesmen to its booths. But the R 18, the R 5, the R 9, none of these were new. Where was the change? It was everywhere.

This time, the car of the year 2000 is born. Too bad for the dreamers: it is fitted with four tires, it runs on gasoline or on gas-oil. Nevertheless, the 69th Automobile Show is teeming with signs that foreshadow the future.

#### Mutants Reach the Market

Fertilization took place in 1976-1978. Gestation progressed, not without problems at Rueil, Villacoublay, Sochaux, Wolfsburg, Detroit, in research centers then in plants, Douai, Rennes, Sochaux, etc. The firstborns, all mutants, are reaching the market. The revolution began with computer-aided design. It

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\* L'HUMANITE dated 28 September.

continued with robotics. Finally, just around the corner, are electronic gadgetry, the TV-screen like dashboard, the talking car. Around the corner is next year's 505 turbo-injection car with a speech synthesizer.

The computer displays a mathematical prototype on the screen, a sort of skeleton of the car to-be. And it bends and stretches it, and calculates accurately the forces exerted on every point of material, on every imaginary piece of sheet-metal. Before, a real prototype had to be built to check all the engineering data. And computer-aided design has changed a lot of things. The R 9 was the first car to take full advantage of it. Then, there was the BX, the new 305.

#### Sheetmetal and Gasoline Savings

For instance, the weight of the BX could be reduced by 400 kg compared with that of the CX. Tens of kilograms of useless sheetmetal were sacrificed. Renault estimates that it has thus achieved a weight gain of 35 percent on the front shield alone, 10 percent on the headlights. It was also used to improve soundproofing, even before prototypes were built. Aerodynamics and the massive use of lightweight plastics, which is now common (for instance in the BX hood and tailgate), have resulted in ever lower fuel consumptions. The engines have been redesigned and electronics have entered them in force. Distributors now come without a switch (and therefore need no adjustment). Microprocessors will inject the exact amount of fuel required at a given time into the cylinders. The car with a consumption of 3 liters per 100 km, planned for 1990, is almost here. The Vera Plus presented at the Paris Show by Peugeot uses 3.5 liters [per 100 km] at 90 km/h, with a top speed of 158 km/h.

#### Toward the Small World Car

And the nicest products of this new technology have not yet seen the day. Unfortunately, small cars, bottom-of-the-line cars do not yet receive the full benefit of all its spin-offs. Designed at the end of the 1960's, and brilliant at the time, the R 5, the 104, the 127 and the Golf are showing increasing signs of old age. They have had their day. The four major European manufacturers are working on the small car for the 1980's which, however, is not yet ready. In the meanwhile, foreign cars have come to stay. The Panda, the Metro of British Leyland, the Polo of Volkswagen have managed to capture a portion of the market. They are still not representative of the generation of small world cars, but we are getting there. The plants, the labs are ready. The Corsa is a first start in this direction. Opel-General Motors invested 2 billion francs in this very first minicar ever built by an American manufacturer. The result may not be equal to expectations, but General Motors is entitled to a few mistakes.

The 69th Automobile Show is also a festival of new models, some traditional, some original, surprising, especially among top-of-the-line cars, due to the high cost of the new technologies.

### Bottom-of-the-Line Turbocars

The small car remains traditional. The Samba and the 104 ZS gain some extra horsepower, and turbocompressors are as promising as ever. When it comes to popularizing turbocompressors, Renault is number one with no less than seven models (including two Diesels) equipped with a turbocompressor. British Leyland has brightened up its Metro which becomes more luxurious with the Van den Plas, and the Panda Super is being added to the other four Pandas which now have a more flexible rear-suspension. Volkswagen, which created a stir with its Audi 100, is now using turbocompressors on all its Diesel models, from the Golf to the Audi 80. The German manufacturer is thus the first to offer supercharged bottom-of-the-line Diesel models. Volkswagen has also equipped its Golf GTI, Sirocco GTI and Jetta GLI with more powerful engines (112 hp). The new 305 will not go unnoticed, even though changes are hardly visible from the outside (the dashboard and radiator grill alone differ from those of the former model). The innovation resides in the front axle which can now receive the new Volkswagen engines, and the first among them, the Diesel engine which imparts a surprising youth to the SRD. The Horizon also features this engine.

The Japanese, too, are concocting a few interesting things. The Nissan Prairie foreshadows the typical small car of the 1980's. Also, Chardonnet is importing into France a Zastava Yugo 45 at a price which might prove absolutely unbeatable.

### The R 4 Again...

France Motors, which is already importing Mazda cars, is also offering a 3-cylinder 52-hp Innocenti. And then, among bottom-of-the-line cars, the R 4 can still bear comparison with its younger siblings. The R 4 has been given front disk-brakes and a new dashboard to start its umpteenth new career. Why not! When it comes to roominess and functionalism, nothing more original has been invented since the R 4.

Too bad that the small car, so discredited among manufacturers (it does not bring in enough profit, although Talbot and General Motors appear to have changed their minds on this), has not been the first to benefit from the extraordinary technological revival of the decade. Of course, this would imply an increased sophistication of products which are already very carefully designed.

### The Talking Car

That revival is more clearly perceived on top-of-the-line models. The BX, Sierra, Audi 100, 505, are its first offspring.

Does that mean we can hail an awakening of French manufacturers? Citroen is engaged in quieter revolutions and, for the first time with the BX, shows concern for its customers' needs. As for the Peugeot-Talbot group, it seems to have emerged from a prolonged state of lethargy to start rejuvenating its models. The 505 turbo-injection model with a speech synthesizer and the Vera

Plus (an economy car prototype, 3.5 liters [per 100 km] at 90 km/h) show that imagination is no longer buried in the drawer of a dusty desk at Sochaux, as recent events had led us to believe.

Is there any awakening worth mentioning at Renault? Thanks to Renault, the French automobile industry has been able to hold on to what it had conquered, and the R 9 can look forward to a very bright future, in spite of the dull design of its body (or maybe because of it). Renault has been the first manufacturer to dare use a turbocompressor on the average man's car, the Renault 18. It is continuing this policy on the Model-20 Diesel car (after the Model 30), and adds automatic operation to the Diesel engine on the 18 GTD. Renault is far ahead in certain technologies but, unfortunately, as the 1982 Show demonstrates, the Renault line is getting old. It lacks a modern gas engine, which all its competitors have managed to build. The most obvious sign, and a cause of concern for Renault management, is the decline of the R 5 which dominated the European market for a decade.

"German..."

Foreign manufacturers are quick to take advantage of these hesitations, these mistakes, the Achilles' heel of the French industry. Indeed, Opel does not hesitate to exaggerate these weaknesses by acknowledging what it considers to be one of its main assets. Advertising for the Ascona begins like this: "German..." A slogan that would have been unthinkable 10 years ago. Volkswagen, however, is more threatening. The leading importer into France, Volkswagen regularly takes a bite at the right spot, with modern and carefully designed products. The Polo, the Santana, the Audi Quattro, the Audi 80 Diesel turbocar have contributed to make the German firm's image far more attractive, which was not the case 10 years ago. The Audi 100, the last small marvel from the other side of the Rhine, the most aerodynamic of all mass-produced cars which, like the BX, uses many lightweight materials (it is 50 kg lighter than the former model, and more roomy), will be one of the attractions of the Show.

#### The Americans To Be Taken Seriously

The cars of the future will look like the BX and the Audi 100, with far greater sophistication, additional weight reductions, higher-performance engines and ridiculously low fuel consumptions. The road is opened.

Ford is not any less ambitious. The success of its Escort has shown that the Americans should not be taken lightly, even if they do not quite comply with canons of comfort as the French see them. The Sierra is an attempt at overcoming that last obstacle. Ford has invested 8 billion francs and, yet, it offers an advanced-design body (designed by a Frenchman), although the motorization technology used (especially the rear-wheel drive) is traditional.

Opel-General Motors, being more European, has more to offer and its Ascona deserves its present success on all West European markets. BMW [Bavarian Automobile Works], another German manufacturer, also ranks as a leader in automobile technology, with massive use of electronics, especially on its Series 7.



Competition is made still sharper by the ambitions of British Leyland (with its Metro and Rover) which is not as moribund as some would say, Alfa Romeo (with its new Alfasud), Fiat which is counting on its Panda and Ritmo until it introduces its Uno, another small would-be world car with which the French will not be able to compete for a few more months.

#### Warning Signals

French manufacturers have remarkable technical equipment and can take advantage of their engineers' and workers' knowhow, which is famous the world over. Besides, the models they present at the Show are better outfitted than they used to be not so long ago, with the exception of bottom-of-the-line models. The R 9 C does not feature adjustable seats, nor a sun-visor for the passenger, and the 9 TL has neither a cigar-lighter nor a trip-mileage indicator! But these are petty details which foreign manufacturers have given up a long time ago, which represents a non-negligible part of their reputation [as published].

Is this reputation well-founded or not? Car owners have been very patient. They have let Renault, Peugeot, Talbot, Citroen get away with a lot before deciding to buy a Volkswagen, an Opel or a Ford, even though after-sales service is not always what it is rumored to be.

Certainly, this has been the major disappointment at this 1982 Show which has revealed the weakness and lack of imagination of French manufacturers. At Billancourt, at Sochaux, they will find a thousand excuses for this setback, although their reasons will sound far more phony than two years ago. Actually, warning signals were lit a long time ago. Citroen was the only one to dare, with its BX. Peugeot must dare its 205, Renault its new R 20 and 30, or its second-generation R 5. Time is of the essence. The automobile industry must progress inexorably, and there will be still less room for mistakes and delusions in 1990.

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CSO: 3698/16

## TRANSPORTATION

### CITROEN BX INTRODUCED AT PARIS AUTO SHOW

Paris LES ECHOS in French 23 Sep 82 p 9

[Article by Airy Routier: "Citroen Is Introducing Its First Conquering Car Designed On a Common Basis With Peugeot SA"]

[Text] Like every even year, the Paris Show will open its doors from 30 September to 10 October. Seldom have so many new models been presented for the first time at the show during the past 15 years. Four important models--important on various accounts--will be unveiled. The Opel Corsa marks the entrance of General Motors on the European compact cars market. With the Sierra, replacing the Taunus, Ford-Europe is exchanging the soap box for advanced aerodynamics while still retaining--why?--the traditional rear-wheel drive. Advanced aerodynamics too for the new Audi 100 which, for its part, shows considerable technological progress.

Fortunately, France is not missing in this great renewal. Citroen is introducing its BX, interesting in many respects, the first of a series of new French vehicles which, it is hoped, should mark a new start for this private group and, therefore, for the French automobile industry as a whole.

The challenge was taken up. Here it is, the first Citroen entirely designed on a common basis (understructure, suspension architecture, engine block) with the Peugeot SA group as a whole. It comes late--seven years after the merger of Peugeot and Citroen, a long genesis.

But the result is here, and it confirms the commitments made by Jean-Paul Parayre, the group's president. Obviously, the BX has retained characteristics peculiar to Citroen, while taking advantage of a scaling down of all mechanical components. This relationship with the future middle-of-the-line Peugeot and Talbot even gives it a marketing plus: it is better adapted to the tastes and habits of the European consumer and should enable the company to get out of the declining market consisting of Citroen fans and vigorously attack its competitors. The Renault 18 to begin with. The first group Citroen is a conquering Citroen.

It has not been easy. Violence was done to the Citroen engineering department: of the four initial prototypes, the only one approved was one not they, but the Italian Bertone, had designed. All the engineering department did was adapt it for mass production. The same happened with the mechanics of the car.

Same understructure and same engine: the pill was all the easier to swallow as Citroen did not have a modern engine. Citroen wanted to retain its hydropneumatic suspension. Peugeot said OK, as long as you keep the simple and inexpensive Mac Pherson architecture. A prerequisite. Connecting the two systems was to attempt the impossible. Still, the challenge was taken up, which shows the brilliance of engineers who, from now on, will have to work under firm constraints and toward definite objectives.

Alas! You cannot manage a company like Citroen without making concessions to influential people, especially when their feelings have been bruised. So, the interior styling was left to them, in spite of the unfortunate Visa precedent. Inconvenient, dull and pretentious: a poor result, unworthy of the car.

This handicap, which company managers will acknowledge off the record, will certainly be overcome one way or the other. All the more so as the car has many qualities and marks an important technological progress, evidenced, among other things, by the massive use of composite materials to replace sheet metal. The resulting weight reduction, together with good aerodynamic characteristics, contributes to a low fuel consumption.\*

Within the group, Talbot has received the first new Diesels and Citroen has been given the advantage of using the new gas engine and the new transmission manufactured in new plants built specially for that purpose. A temporary but appreciable advantage, and the double-chevron company should be able to make the most of it considering that its aggressive marketing has enabled it to outstrip Peugeot, both on the production line and on the market, and that it now represents the center of resistance of the private group, which is still facing serious difficulties.

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\* Official fuel consumption at 90 km/h, 120 km/h and in city driving: for the BX: 5.6, 7.5 and 7.7 liters/100 km; for the BX 14E: 5.5, 7.1 and 8.5 liters/100 km; for the BX 16 TRS: 5.6, 7.4 and 8.9 liters/100 km.

## TRANSPORTATION

### SNECMA MAY BREAK OFF COOPERATIVE ENDEAVORS WITH GE

Paris L'USINE NOUVELLE in French 23 Sep 82 p 88

[Text] Is the SNECMA [National Aircraft Engine Research and Development Company] about to break off its cooperative program with the U.S. General Electric? Ever since Daniel Tenenbaum was appointed by Charles Fiterman, minister of transport, to head the DGAC [General Directorate of Civil Aviation], the question has been worth asking. For, according to Mr Tenenbaum, "in the area of civilian jets, in the future the SNECMA should master the technology for what is called the 'hot part,' which to date has come from American sources."

With this in mind, the government has just proposed to the SNECMA that it begin a program to develop the hot part of civilian jets. Is this the start of a break with GE? The 1971 agreement linking the SNECMA with General Electric took concrete shape that same year, with the establishment of the 50/50 subsidiary, CFM International; this holds promise for the future since the French company hopes to use the CFM-56 engine in a number of Boeing 737-300, DC-8, and KC-135 planes. That would amount to approximately 2,500 engines!

In the name of a decreased dependence, should all this be allowed to be lost? At the SNECMA, they hope that France's technological dependence [sic] will not come at that price. But even now, the SNECMA has no guarantee that General Electric intends to pursue its cooperation with France in the area of civilian engines. For GE's new president quite recently said that he prefers military engines, such as those for the B-1 bombers that Ronald Reagan wants.

Still, for the time being the French government favors the CFM 56-2K2, an engine derived from the CFM-56-2 (11.4 tons of thrust instead of 10.9 tons), which is being developed jointly by the SNECMA and General Electric for the Airbus-320 150-seat plane. "This is the best solution for this plane, for

it uses an engine that already has good performances, and we are sure that it will be ready by about 1987, which is when the A-320 should be offered to the airlines," said Daniel Tenenbaum. As for the cost, that should be about a fourth of the cost of an entirely new engine.

The government's proposal to have the SNECMA study the hot part of civilian jet engines (the French manufacturer already has this technological capability for military jets) would, in the first phase, have no objective other than to enable it to strengthen its technological position. But Mr Tenenbaum is looking further into the future. "If the SNECMA later wants to draw closer to other European engine manufacturers, it will be in a better position to do so if it has more technological freedom." It is hard not to think of an agreement with Rolls-Royce. But then how could the SNECMA maintain its cooperative program with General Electric?

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## TRANSPORTATION

FARNBOROUGH: A-320 DEBATE CONTINUES, COMMUTERS COMPETE

Paris AVIATION MAGAZINE INTERNATIONAL in French 1 Oct 82 pp  
20-28

[Article by Pierre Sparaco and Serge Brosselin]

[Excerpt] Exactly 50 years after the first air show sponsored by the SBAC (Society of British Aerospace Companies), and 25 years after the transfer of the show to the Farnborough airport, this year there was a very large-scale, highly professional show, which reasserted its absolutely international aims. A certain number of new items were there, but above all, for a week the exhibitors and visitors from all over the world could draw up an inventory of the good and bad, as well as the hopes, of the worldwide aviation industry. All of this was spiced by some good-quality flight presentations that benefitted from quite acceptable weather conditions. The overall result? Uncertain, like our depressed economic situation. The research facilities are pawing the ground at the starting gate, but the starting signal for an economic upturn is slow in coming. When will we see the light at the end of this tunnel?

In this difficult context, the perplexity already observed at some earlier shows was again manifested in a variety of ways. When McDonnell Douglas announced that it would not exhibit at Farnborough and would also not be at Le Bourget in 1983, this was thought to be an expression of a certain amount of ill humor, or perhaps an urgent need to save money. But even at the show, first Pratt and Whitney and then Lockheed revealed their decisions not to take part. Why? Because a large aircraft or engine manufacturer doesn't sign any contracts at an exhibition booth or in a pavillion, and because the expenses involved are reaching summits that are becoming more and more difficult to justify (about \$1 to \$1.5 million for a big company that really wants to put forth a top-quality image). And yet, the air shows seem more than ever to be a source of ideas that no other method can replace.

These false notes, along with some others, still do not keep us from saying that from every point of view, the Society of British Aerospace Companies certainly kept its promises. Even the general public found what it wanted to see, with some top-quality "firsts": the Boeing 757 and 767, Airbus A-310 (already presented at Hanover last spring), British Aerospace 146, Rockwell International B-1, Lockheed TR-1, and even a brilliant illustration of an innovation from the past: the first dirigible from Airship Industries.

The visitors from industry surveyed the productions of a total of 500 exhibitors, spending a good deal of time in front of models of some very ambitious projects, such as the ACA (Agile Combat Aircraft), formerly the P.110 of British Aerospace, presented in its actual size, the ND-102, the result of a convergence of thought between Northrop and Dornier. And they once again heard the operational lessons learned from the Falklands conflict. Discussions paused only when the rising decibel levels drowned out the loudest voices. Now we have to learn what we can from the Farnborough air show.

#### Still the "150-Seater"

For civilian aircraft, there were press conferences, statements and comments made in the pavillions, all focussed on the new generation of "150-seaters." There were floods of words saying nothing, or very little, since the situation is still at a standstill. The potential market is there (2,500 planes), the engines are not yet ready, and the companies don't have enough money. Perhaps it will all seem clearer by the end of the year, people at Airbus Industrie were saying. The Airbus documentation still continues to claim that the A-320 will be ready at the end of 1986. This would mean that a decision would have to be forthcoming in the very near future (sometime this winter), with the "launch" of the program, to use the favored expression, depending more on the quality than the quantity of the first customers. But there is still one problem that has not been resolved to the satisfaction of the European consortium: the engines to be used.

Boeing may not be using its stalling maneuvers any more; it is continuing to invest in the "7-7" (Seven Dash Seven) project which will use the B-757 and 767 cockpit, an airfoil similar to that in its most recent creations, more composite materials, and also new aluminum alloys. And it could be ready for delivery starting in 1988. Here the slippage in time has been confirmed, as the Seattle-based company says that 48 months will elapse between the starting signal and the first deliveries. So there will be no decision before 1984.

Similar comments came from McDonnell Douglas (though it had no booth or pavillion at Farnborough, it did have a representative there) which, while concentrating its immediate efforts on derivatives of the DC-9 and DC-10, feels that a "150-seater," provisionally designated the D-3300, might "perhaps" be started in 1984.

This hesitation waltz seems to be lasting much longer than was expected, accompanied by an extraordinary sort of musical-chairs game played between the leading partners. This has given new meaning to the projects of an outsider, no other than Lockheed. In close cooperation with Pratt and Whitney, the Burbank research facility is continuing its work on the definition of the Boeing-727RE (Re-Engined); transformed into a twin-jet with two PW-2037 at a cost of \$12 to \$15 million, this plane could provide 75 percent of the fuel savings promised by new planes of the coming generation.

Might the B-727-200, of which there are about 700 flying all over the world, offer an intermediate solution worthy of some attention? Maybe, especially if we are thinking of deliveries starting in 1985, which might appeal to buyers in a hurry. But Lockheed told us that the possible decision to take action on this will certainly not be made before 1983, and then only if a fairly large number of orders can be obtained. In that case, the B-727RE would succeed the "TriStar" in the assembly facility in Palmdale, California.

#### What About Engines?

Still on the subject of the "150-seater," General Electric and the SNECMA, with the CFM-56 in its 2K2 variant, may be on the right track; this could well prove to be an excellent starting point. Rolls-Royce and the Japanese consortium associated with it were presenting the RJ-500, with the demonstrators continuing their bench testing. This is a difficult situation, since negotiations are in progress with Pratt and Whitney, with MTU and Fiat also waiting in the background.

May the aircraft companies have been hoping that Farnborough would act as a springboard for an agreement on a multinational 10-ton development? Perhaps. But a meeting held in Munich shortly before the opening of the show did not help to reach any agreements, and the parties involved have just been saying that contacts are continuing and that a new meeting is scheduled. So it is by no means impossible that we may witness the birth of an American-English-Japanese-German-Italian engine. It still remains to be seen whether seven companies will be



able to agree on the technical decisions and the distribution of jobs and investments. Farnborough has provided no answer for this question.

Robert Carlson, executive vice president of United Technologies, who is well known in the aviation world for the candor of his comments, again expressed his concern. Since the coming of the first jets, he told us, a single civilian engine, the JT8D, has reached the point of making a profit, and just one other is about to do the same in the short term. Even more, the development and industrial production of a 10-ton engine now require investments of about \$1 billion. In order to be successful, at least 1,200 engines must be sold, and in case a decision is made to move ahead next January, the financial equilibrium of such an operation would be reached at the earliest between 1995 and 2001. This certainly gives the industry something to think about, and here we are back to this point again, does justify some perplexity.

Fortunately for everyone, there are other outlets, other products. Airbus Industrie, whose management intentionally uses an aggressive tone, pointed out that its orders increased by 82 planes during the 24-month period between the two Farnborough shows, that the recession has not caused any cancellations but only requests for later deliveries, and that the objective for 1982 is still to place 45 planes. The A-310? In 5 months, it has totaled 500 hours of flight time, of the 1,300 hours needed to obtain its navigability certificate, and it is already as "mature" as the A-300. Even better, its performances in range, Mach number, and payload greatly exceed the contract specifications.

A specific example was mentioned by Bernard Ziegler, flight director: leaving from Madrid, a high-altitude and hot airport, with constant weather conditions, the A-310 will be able to carry a cargo 2 tons above what was planned. What about the comparisons with the Boeing 767, which have been repeated in the U.S. aviation press? These comparisons are highly subjective; they were even published before the exact consumption of the A-310 was known in Toulouse! We have had enough of these fairy tales from our competitors, added Bernard Lathiere, the managing director of Airbus Industrie.

There have been enough arguments, we won't get into the subject, the Boeing people were saying 24 hours later. But Boeing did announce a 4 percent improvement in performances of the

B-737-300 bi-CFM-56, along with the study of a B-737-400 with 148 seats which could use the 2K2 and then later, under the designation 737-500, another 10-tons of the new generation. This 747-300 is another new designation, but that is just a simple name change for the SUD version with a lengthened upper section, the first step toward a 650-seat plane, and later an 800-seat version, which are obviously being kept in reserve for better days.

Optimistic comments have been heard about the B-757 and 767. The B-757 will have its empty mass decreased by 1,655 kg, while on a 1,800-km flight, the consumption of its Rolls-Royce RB-211 535C is 3.5 percent less than predicted. With 50 passengers more than the B-727, the B-757 consumes 24 percent less fuel. The B-767, which has just been brought into service at United Airlines, will also lead to longer versions (20 to 70 added seats). So the economic outlook is grim, but still this year Boeing will deliver 180 planes and about 150 in 1983.

#### Fokker Against British Aerospace

There is some harsh competition on the market for more modest capacities. The clash is particularly violent between Fokker and British Aerospace. In the relatively calm environment of the industry pavillions at Farnborough, columns of statistics were presented on the F-28 by Fokker, and on the BAe-146 by British Aerospace; but the two industries are bitter enemies in a temporarily restricted market.

For the Dutch firm, Fokker, the rate of production of the F-28 could rise from 16 to 18 units a year, and its 85-seat version remains a good choice for many regional routes. In addition, the research facility at Schiphol is working on a 100/110-seat version that could be started next spring. Furthermore, a decision on a change in engine for the F-27 might be made in several months (either an improved "Dart" or the PW 100), while the F-XX project (bi-props with 100/130 seats) is more of a long-term plan. Fokker is also maintaining its contacts with Airbus Industrie for future projects.

✓ British Aerospace will be bringing out the ATP (Advanced Turboprop); this is a longer version of the 748 with a 64-seat capacity, powered by two PW 100/9 of 2,520 hp. It will fly in June 1985, and deliveries could begin in March 1986. British Aerospace will then be able to offer a complete family of aircraft, from the Jetstream 31 to the 748, ATP and 146, with seating capacities from 19 to about 100 seats.

For the Franco-Italian ATR-42, during the Farnborough air show orders rose to 37 units (and seven options) after the purchase of two units (and two options) by the Noumea-based firm, Air Caledonia, and the order of three planes by the Danish company, Cimber Air.

There is also some harsh competition in the commuter market. There are two big rivals which both obtained their navigability certificates during the show: the Short SD-360, which will be produced at the rate of 5 a month, and the Dornier 228-200, which is now about to begin a presentation trip, which will take it to a promising but highly competitive market: India.

Optimism also prevails about the CASA-Nurtanio CN-235; the Indonesian air force has just ordered 32 units, thus increasing its orders to 114 units, still several months before the first flight. Confidence reigns too at Embraer about its "Brasilia" (46 firm orders) which will fly in mid-1983, and at Saab-Fairchild, whose first SF-340 is to come out of the Linkoping factory at the end of this month. A similar optimism is in evidence at Havilland Aircraft of Canada, about its "Dash 8." Clearly, it is much too soon to try to summarize this year's Farnborough air show.

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## TRANSPORTATION

### BRIEFS

NEW AIRBUS TRIM SYSTEM--Airbus Industrie just announced the development of a new weight-distribution analysis and trim system which will soon be made available to Airbus clients. This digital system will automatically measure the loads on each landing gear and will make it possible to reduce crew work prior to takeoff. These data will be transmitted to ECAM [expansion unknown] and FMS [expansion unknown]. [Text] [Paris AVIATION MAGAZINE INTERNATIONAL in French 15 Sep 82 p 19] 9294

ALCOHOL, VEGETABLE OIL FUELS--The French Petroleum Institute and the Solar Energy Commission have just launched a research program on the use of alcohol and vegetable oil in engines. Vegetable oils do offer advantages, especially in the operation of Diesel engines, as they are compatible with gas-oil. The basic product will consist of rapeseed oil. Research will deal, among other things, with economic yields and the best method of use: vegetable oil alone or blended with gas-oil. The Solar Energy Commission has also committed itself to supporting SEMI [expansion unknown]-Pielstick (a company of the Alsthom Atlantique group) in its efforts to develop a large dual-fuel methanol Diesel engine. French National Railroads locomotive engines, for instance, could benefit from the results of this research. In this case, it has been calculated that they could save 140,000 oil-equivalent tons of gas-oil per year. [Text] [Paris INFORMATIONS CHIMIE in French Jun/Jul 82 p 79] 9294

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